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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,333	06/23/2006	Daisuke Kumaki	0756-7728	4962
31780	7590	09/09/2008	EXAMINER	
ERIC ROBINSON			WILSON, SCOTT R	
PMB 955			ART UNIT	
21010 SOUTHBANK ST.			PAPER NUMBER	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/584,333

**Applicant(s)**

KUMAKI ET AL.

**Examiner**

SCOTT R. WILSON

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**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-7,10-15,18-20 and 23-26 is/are rejected.
- 7) ☒ Claim(s) 3,4,8,9,16,17,21 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 6/23/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 6 and 7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 25 of copending Application No. 11/087,717 (Nomura et al., US 2005/0225236 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. As to claim 1, Nomura et al., Figure 9, discloses (paragraph [0070]) a light-emitting element comprising: a first layer; a second layer; and a third layer, wherein the first, second and third layers are interposed between first (501) and second (502) electrodes which faces to each other; wherein the first layer (512) includes TPAQn (paragraph [0079]) and a first substance showing an electron accepting property to the TPAQn, embodied as molybdenum oxide or vanadium oxide, wherein the second layer (515) includes a second substance of which an electron transporting property is higher than a hole transporting property, embodied as PBD (paragraph [0074]), and a third substance showing an electron donating property to the second substance, embodied as lithium oxide (paragraph [0080]); wherein the third layer contains a light-emitting substance (513), and wherein light is emitted when a voltage is applied such that a potential of the second electrode is higher than that of the first electrode. Nomura et al., Figure 9, teaches that the third layer, which contains a light-emitting substance, is formed between the first and second layers, rather than being sequentially stacked; wherein the first layer is in contact with the first electrode and wherein the third layer is in contact with the

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second electrode. This is only a semantic difference, and the overall structure of the light emitting device, as seen in applicants Figure 1 and Nomura et al. Figure 9, is however identical in that it comprises a central light emitting layer (322) and (513) between an electron transport layer (321) and (515), and an electron injection layer (312) and (516) and a hole transport layer (323) and (512) and hole injection layer (324) and (511).

This is a provisional obviousness-type double patenting rejection because the **conflicting claims** have not in fact been patented.

As to claim 6, Nomura et al., Figure 9, and paragraph [0028], discloses that the light emitting device is a portion of a pixel, in the same sense as applicants Figure 1.

As to claim 7, Nomura et al., paragraph [0028], discloses that the light emitting device may be part of a display.

Claims 2, 10 and 11 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 25 of copending Application No. 11/087,717 (Nomura et al., US 2005/0225236 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. As to claim 2, Nomura et al., Figure 9, discloses (paragraph [0070]) a light-emitting element comprising: a first layer; a second layer; and a third layer, wherein the first, second and third layers are interposed between first (501) and second (502) electrodes which faces to each other; wherein the first layer (512) includes TPAQn (paragraph [0079]) and a first substance showing an electron accepting property to the TPAQn, embodied as molybdenum oxide or vanadium oxide, wherein the second layer (515) includes a second substance of which an electron transporting property is higher than a hole transporting property, embodied as PBD (paragraph [0074]), and a third substance showing an electron donating property to the second substance, embodied as lithium oxide (paragraph [0080]); wherein the third layer contains a light-emitting substance (513), and wherein light is emitted when a voltage is applied such that a potential of the second electrode is higher than that of the first electrode. Nomura et al., Figure 9, teaches that the third layer, which contains a light-emitting substance, is formed between the first and second layers, rather than providing the first layer closer to the first electrode than the second layer and providing the third layer closer to the second

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electrode than the second layer. This is only a difference in semantics, and the overall structure of the light emitting device, as seen in applicants Figure 1 and Nomura et al. Figure 9, is however identical in that it comprises a central light emitting layer (322) and (513) between an electron transport layer (321) and (515), and an electron injection layer (312) and (516) and a hole transport layer (323) and (512) and hole injection layer (324) and (511).

This is a provisional obviousness-type double patenting rejection because the **conflicting claims** have not in fact been patented.

As to claim 10, Nomura et al., Figure 9, and paragraph [0028], discloses that the light emitting device is a portion of a pixel, in the same sense as applicants Figure 1.

As to claim 11, Nomura et al., paragraph [0028], discloses that the light emitting device may be part of a display.

Claims 5, 12 and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 25 of copending Application No. 11/087,717 (Nomura et al., US 2005/0225236 A1) in view of Kido et al. (US 2003/0189401 A1). As to claim 5, Nomura et al., Figure 9, discloses (paragraph [0070]) a light-emitting element comprising: a first layer; a second layer; and a third layer, wherein the first, second and third layers are interposed between first (501) and second (502) electrodes which faces to each other; wherein the first layer (512) includes TPAQn (paragraph [0079]) and a first substance showing an electron accepting property to the TPAQn, embodied as molybdenum oxide or vanadium oxide, wherein the second layer (515) includes a second substance of which an electron transporting property is higher than a hole transporting property, embodied as PBD (paragraph [0074]), and a third substance showing an electron donating property to the second substance, embodied as lithium oxide (paragraph [0080]); wherein the third layer contains a light-emitting substance (513), and wherein light is emitted when a voltage is applied such that a potential of the second electrode is higher than that of the first electrode. Nomura et al., Figure 9, teaches that the third layer, which contains a light-emitting substance, is formed between the first and second layers, rather than providing the first layer closer to the first electrode than the second layer and providing the third layer closer to the second electrode than the second layer. This is only a difference in semantics, and the

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overall structure of the light emitting device, as seen in applicants Figure 1 and Nomura et al. Figure 9, is however identical in that it comprises a central light emitting layer (322) and (513) between an electron transport layer (321) and (515), and an electron injection layer (312) and (516) and a hole transport layer (323) and (512) and hole injection layer (324) and (511). Nomura et al. does not expressly teach that the first and second electrodes are fully or partially transparent, and it also fails to teach adjusting the layer thicknesses to maximize optical transmission.

Kido et al., paragraph [0157], teaches that the anode and cathode electrode in a similar layered light emitting device, which would correspond to applicants first and second electrode, are transparent. Kido et al., paragraph [0202], further teaches that the optical path length of, for example, the electron injection layer, can be adjusted to be an odd number of quarter wavelengths, in order to minimize destructive interference and maximize emission intensity. At the time of invention, it would have been obvious to adjust the layer thicknesses in the device of Nomura et al. according to the teaching of Kido et al. The motivation would have been to maximize the performance of a display, such as that taught by Nomura et al., paragraph [0004], incorporating the light-emitting device.

This is a provisional obviousness-type double patenting rejection.

As to claim 12, Nomura et al., Figure 9, and paragraph [0028], discloses that the light emitting device is a portion of a pixel, in the same sense as applicants Figure 1.

As to claim 13, Nomura et al., paragraph [0028], discloses that the light emitting device may be part of a display.

Claims 14, 19 and 20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 25 of copending Application No. 11/087,717 (Nomura et al., US 2005/0225236 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. As to claim 14, Nomura et al., Figure 9, discloses (paragraph [0070]) a light-emitting element comprising: a first layer; a second layer; and a third layer, wherein the first, second and third layers are interposed between first (501) and second (502) electrodes which faces to each other; wherein the first layer (512) includes an aromatic amine, embodied as TPAQn (paragraph [0079]), and a first substance showing an electron accepting property to the TPAQn,

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embodied as molybdenum oxide or vanadium oxide, wherein the second layer (515) includes a second substance of which an electron transporting property is higher than a hole transporting property, embodied as PBD (paragraph [0074]), and a third substance showing an electron donating property to the second substance, embodied as lithium oxide (paragraph [0080]); wherein the third layer contains a light-emitting substance (513), and wherein light is emitted when a voltage is applied such that a potential of the second electrode is higher than that of the first electrode. Nomura et al., Figure 9, teaches that the third layer, which contains a light-emitting substance, is formed between the first and second layers, rather than being sequentially stacked; wherein the first layer is in contact with the first electrode and wherein the third layer is in contact with the second electrode. This is only a semantic difference, and the overall structure of the light emitting device, as seen in applicants Figure 1 and Nomura et al. Figure 9, is however identical in that it comprises a central light emitting layer (322) and (513) between an electron transport layer (321) and (515), and an electron injection layer (312) and (516) and a hole transport layer (323) and (512) and hole injection layer (324) and (511).

This is a provisional obviousness-type double patenting rejection because the **conflicting claims** have not in fact been patented.

As to claim 19, Nomura et al., Figure 9, and paragraph [0028], discloses that the light emitting device is a portion of a pixel, in the same sense as applicants Figure 1.

As to claim 20, Nomura et al., paragraph [0028], discloses that the light emitting device may be part of a display.

Claims 15, 23 and 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 25 of copending Application No. 11/087,717 (Nomura et al., US 2005/0225236 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. As to claim 15, Nomura et al., Figure 9, discloses (paragraph [0070]) a light-emitting element comprising: a first layer; a second layer; and a third layer, wherein the first, second and third layers are interposed between first (501) and second (502) electrodes which faces to each other; wherein the first layer (512) includes an aromatic amine, embodied as TPAQn (paragraph [0079]), and a first substance showing an electron accepting property to the TPAQn,

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embodied as molybdenum oxide or vanadium oxide, wherein the second layer (515) includes a second substance of which an electron transporting property is higher than a hole transporting property, embodied as PBD (paragraph [0074]), and a third substance showing an electron donating property to the second substance, embodied as lithium oxide (paragraph [0080]); wherein the third layer contains a light-emitting substance (513), and wherein light is emitted when a voltage is applied such that a potential of the second electrode is higher than that of the first electrode. Nomura et al., Figure 9, teaches that the third layer, which contains a light-emitting substance, is formed between the first and second layers, rather than providing the first layer closer to the first electrode than the second layer and providing the third layer closer to the second electrode than the second layer. This is only a difference in semantics, and the overall structure of the light emitting device, as seen in applicants Figure 1 and Nomura et al. Figure 9, is however identical in that it comprises a central light emitting layer (322) and (513) between an electron transport layer (321) and (515), and an electron injection layer (312) and (516) and a hole transport layer (323) and (512) and hole injection layer (324) and (511).

This is a provisional obviousness-type double patenting rejection because the **conflicting claims** have not in fact been patented.

As to claim 23, Nomura et al., Figure 9, and paragraph [0028], discloses that the light emitting device is a portion of a pixel, in the same sense as applicants Figure 1.

As to claim 24, Nomura et al., paragraph [0028], discloses that the light emitting device may be part of a display.

Claims 18, 25 and 26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 25 of copending Application No. 11/087,717 (Nomura et al., US 2005/0225236 A1) in view of Kido et al. (US 2003/0189401 A1). As to claim 18, Nomura et al., Figure 9, discloses (paragraph [0070]) a light-emitting element comprising: a first layer; a second layer; and a third layer, wherein the first, second and third layers are interposed between first (501) and second (502) electrodes which faces to each other; wherein the first layer (512) includes an aromatic amine, embodied as TPAQn (paragraph [0079]), and a first substance showing an electron accepting property to the TPAQn, embodied as molybdenum oxide or vanadium oxide, wherein the second layer (515) includes

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a second substance of which an electron transporting property is higher than a hole transporting property, embodied as PBD (paragraph [0074]), and a third substance showing an electron donating property to the second substance, embodied as lithium oxide (paragraph [0080]); wherein the third layer contains a light-emitting substance (513), and wherein light is emitted when a voltage is applied such that a potential of the second electrode is higher than that of the first electrode. Nomura et al., Figure 9, teaches that the third layer, which contains a light-emitting substance, is formed between the first and second layers, rather than providing the first layer closer to the first electrode than the second layer and providing the third layer closer to the second electrode than the second layer. This is only a difference in semantics, and the overall structure of the light emitting device, as seen in applicants Figure 1 and Nomura et al. Figure 9, is however identical in that it comprises a central light emitting layer (322) and (513) between an electron transport layer (321) and (515), and an electron injection layer (312) and (516) and a hole transport layer (323) and (512) and hole injection layer (324) and (511). Nomura et al. does not expressly teach that the first and second electrodes are fully or partially transparent, and it also fails to teach adjusting the layer thicknesses to maximize optical transmission.

Kido et al., paragraph [0157], teaches that the anode and cathode electrode in a similar layered light emitting device, which would correspond to applicants first and second electrode, are transparent. Kido et al., paragraph [0202], further teaches that the optical path length of, for example, the electron injection layer, can be adjusted to be an odd number of quarter wavelengths, in order to minimize destructive interference and maximize emission intensity. At the time of invention, it would have been obvious to adjust the layer thicknesses in the device of Nomura et al. according to the teaching of Kido et al. The motivation would have been to maximize the performance of a display, such as that taught by Nomura et al., paragraph [0004], incorporating the light-emitting device.

This is a provisional obviousness-type double patenting rejection.

As to claim 25, Nomura et al., Figure 9, and paragraph [0028], discloses that the light emitting device is a portion of a pixel, in the same sense as applicants Figure 1.

As to claim 26, Nomura et al., paragraph [0028], discloses that the light emitting device may be part of a display.

***Allowable Subject Matter***

Claims 3, 4, 8, 9, 16, 17, 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art discloses the claimed device where the molar ratio of the first substance to TPAQn in the first layer is between 0.5 and 2.0.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott R. Wilson whose telephone number is 571-272-1925. The examiner can normally be reached on M-F 8:30 - 4:30 Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on 571-272-1236. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

srw  
September 9, 2008

/Evan Pert/

Primary Examiner, Art Unit 2826